



Development of Amendments to Rules Concerning E. Coli Bacteria in Waters of the State

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Overview

The Indiana Department of Environmental Management (IDEM) has developed proposed rule language for amendments to rules in Title 327 concerning compliance with the bacteriological criteria and the application of a single sample maximum limitation of 235 most probable number (mpn) or colony forming units (cfu)/100 ml of *Escherichia coli* (*E. coli*) bacteria to waters of the state. This proposed rule is to be presented to the Water Pollution Control Board (board) on November 14, 2007, for consideration of final adoption.

Citations Affected

This rulemaking amends 327 IAC 2-1-6, 327 IAC 2-1.5-8, and 327 IAC 5-10-6.

Affected Persons

This rulemaking affects permitted dischargers under the National Pollutant Discharge Elimination System (NPDES) whose discharges of wastewater must comply with water quality standards and permit requirements for *E. coli* bacteria established for waters of the state.

Reason(s) for the Rule

All waters of the state in Indiana are designated for full body contact recreational use. In support of this designation, Indiana rules contain surface water quality criteria for *E. coli* bacteria that are in effect during the April through October recreational season.

Due to the nature and limitations of bacterial sampling and analysis, it is not possible for operators of wastewater treatment facilities to ensure compliance with a single sample maximum at all times. Currently available testing methods are severely limited because they carry a significant likelihood of “false positive” noncompliance decisions based on single samples. This stems from

the inherent spatial and temporal variability of bacteria populations in treated effluents. In other words, the testing methods may produce falsely high values that could place facilities in noncompliance even when the wastewater treatment plant is being operated properly. Because of these limitations in the currently available/approved testing methods for *E. coli*, Congress is requiring EPA to develop a more accurate method to better assess bacterial water quality and support protection of recreational uses.

The present primary contact *E. coli* standard is based on research carried out by U.S. EPA in the early 1980s (U.S. EPA, Health Effects Criteria for Recreational Water, August 1984). In 1986, U.S. EPA recommended national *E. coli* standards for freshwater recreation based on those earlier studies. The standards included both a geometric mean value derived directly from the results of the research and single sample maximum value based on a theoretical statistical extrapolation from the research for varying levels of risk. Indiana adopted for all waterways the most stringent values, intended by U.S. EPA for designated bathing beaches.

In subsequent guidance documents and regulations, U.S. EPA has noted that the single sample maximum values were intended as a tool for beach managers to evaluate when beaches should be closed due to high bacteria values. EPA acknowledged some confusion in the application of the single sample maximum to permit limits and other compliance measures

In June 2003, U.S. EPA published a document, Bacterial Water Quality Standards for Recreational Waters, Freshwater and Marine Waters, Status Report, that provides an informative summary of state and tribal standards. The document demonstrated that most states determine a wastewater facility’s NPDES permit compliance with bacterial

standards based upon the geometric mean of a minimum number of effluent samples, 7-day averages of samples, or by excluding a percent of the data due to testing method variability. Each of these approaches allows wastewater treatment operators to function within acceptable and protective permit parameters without being subject to noncompliance due to the variability inherent in E. coli testing results.

Economic Impact of the Rule

Because a NPDES discharger affected by E. coli compliance may choose to use the mechanism developed through this rulemaking, the rule imposes no requirements with a fiscal impact. In order to avail itself of the choice, a discharger may increase its sampling and laboratory costs (in order to meet the minimum of 10 samples to be analyzed) but may also see a reduction in compliance activity costs if the discharger had been subject to enforcement action.

Benefits of the Rule

The daily maximum, single sample effluent limitation for E. coli is included in NPDES permits for most wastewater treatment plants. For a variety of reasons, many NPDES permits are appealed due to the expected inability to meet the single sample maximum limits for E. coli. The permittees feel the need to protect their legal rights with regard to noncompliance; yet, the many appeals have hindered permit renewals and created costly legal expenses for both IDEM and the affected permittees.

The draft rule language bases the determination of an exceedance of wastewater effluent limitations for E. coli upon not more than ten percent (10%) of the discharge samples during a calendar month (when a minimum of ten samples are analyzed) exceeding the 235 cfu/mpn per 100 ml. This rule amendment will alleviate compliance issues for NPDES dischargers that comply with the requirements of this rule.

Description of the Rulemaking Project

A workgroup was formed to consider amending Indiana's rules regarding the use of a single sample maximum permit limitation for E. coli. U.S. EPA gives states discretion in the use of single sample maximums in permit limits and recommends against determining compliance based upon a single sample. The workgroup discussions resulted in a determination to amend rules to allow not more than ten percent (10%) of all E. coli samples (when not

less than ten (10) samples are taken and analyzed for E. coli) in a calendar month to exceed two hundred thirty-five (235) cfu or mpn per one hundred (100) milliliters as a daily maximum.

Scheduled Hearings

First Public Hearing: August 8, 2007, at the WPCB meeting held at Indiana Government Center South, Indianapolis, Indiana.

Second Public Hearing: November 14, 2007, at the WPCB meeting held at the Harrison County Courthouse, County Commissioners and Councils Room, 300 North Capitol Avenue, Corydon, Indiana.

Consideration of Factors Outlined in Indiana Code 13-14-8-4

Indiana Code 13-14-8-4 requires that in adopting rules and establishing standards, the board shall take into account the following:

- 1) All existing physical conditions and the character of the area affected.
- 2) Past, present, and probable future uses of the area, including the character of the uses of surrounding areas.
- 3) Zoning classifications.
- 4) The nature of the existing air quality or existing water quality, as appropriate.
- 5) Technical feasibility, including the quality conditions that could be reasonably be achieved through coordinated control of all factors affecting the quality.
- 6) Economic reasonableness of measuring or reducing any particular type of pollution.
- 7) The right of all persons to an environment sufficiently uncontaminated as not to be injurious to:
 - (A) human, plant, animal, or aquatic life; or
 - (B) the reasonable enjoyment of life and property.

Consistency with Federal Requirements

The amended rules are consistent with federal rules.

Rulemaking Process

The first step in the rulemaking process is a first notice published in the Indiana Register. This includes a discussion of issues and opens a first comment period. The second notice is then published which contains the comments and the department's responses to comments from the first comment period and the draft rule. Notice of the first hearing on the rule is also published in the Indiana Register. The Water Pollution Control Board holds the first

meeting/hearing and public comments are heard. The proposed rule, also known as the draft rule as preliminarily adopted, is published in the Indiana Register after preliminary adoption. If the proposed rule is substantively different from the draft rule, a third written comment period is required. After notice in the Indiana Register, the second public meeting/hearing is held and public comments are heard. Once final adoption occurs, the rule becomes effective 30 days after filing with the Legislative Services Agency.

IDEM Contact

Additional information regarding this rulemaking action can be obtained from MaryAnn Stevens, Rules Section, Office of Water Quality, (317) 232-8635 or technical information regarding the NPDES program and discharge permit limits for E. coli from Catherine Hess, Permits Technical Support Section Chief, Office of Water Quality, (317) 232-8704 or (800) 451-6027 (in Indiana).